ECO's

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DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON. D.C. 20350-2000

IN REPLY REFER TO
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05 April 99

From: Chief of Naval Operations
To: Commander, Naval Facilities Engineering Command

Subj: NAVY POLICY FOR CONDUCTING ECOLOGICAL RISK ASSESSMENTS

Ref: (a) Department of the Navy Environmental Policy Memorandum 97-04; Use of Ecological Risk Assessments, ltr of 16 May 97
(b) EPA Interim Final Ecological Risk Assessment Guidance for Superfund, 5 Jun 97

End: (1) Navy Policy for Conducting Ecological Risk Assessments

1. Reference (a) is Navy policy for conducting ecological risk assessments. Reference (b) is Environmental Protection Agency (EPA) guidance that defines an eight-step process for conducting ecological risk assessments.

2. Enclosure (1) is provided in response to concerns received from the field to amplify reference (a) and to clarify our interpretation of the EPA eight-step process of reference (b) The EPA eight-step process does not clearly define exit points at which an ecological risk assessment can be considered complete for the intended purpose. Enclosure (1) describes a three tiered process for Navy, which includes all the elements of the EPA eight-step process but provides opportunities to exit the process at lower steps when appropriate. Use of the Navy tiered process will reduce the time and cost necessary for conducting ecological risk assessments.

3. My point of contact is Wanda L. Holmes who can be reached at (703)604—5420, DSN 664—5420 or e—mail: holmes.wanda@hq.navy.mil.

A. A. GRANUZZO
By direction

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Tier 1: SCREENING RISK ASSESSMENT (SRA)

The Tier 1 Screening Risk Assessment should use existing data (such as sampling or monitoring data) for all detected contaminants. The SRA should be conducted during the Site Inspection phase. No new or additional data collection activities should be implemented as part of the screening risk assessment. Thus, overall costs should be low and the SRA is expected to be completed in a relatively quick manner (no more than 2 to 3 months). The SRA employs conservative (i.e. more stringent) assumptions to evaluate existing site data and determine whether additional ecological risk assessment or accelerated site cleanup may be warranted, or that the site poses acceptable risks and a designation of no further action is appropriate.

The criteria for exiting the Tier 1 Screening Risk Assessment includes:

1) The site passes the screening risk assessment; there is either an absence of complete exposure pathways to ecological receptors, or an absence of unacceptable risks. If the site passes the screen then the determination is made that the site poses acceptable risks to ecological resources and the site shall be closed out for ecological concerns.

2) The site fails the screening risk assessment; the site must have both a complete exposure pathway and unacceptable risks. If the site fails the screen then either interim cleanup (if more cost advantageous) may be implemented or the site moves to the second tier.

In many cases, the site will not successfully pass the screening risk assessment. However, many chemicals evaluated in the screening assessment may be eliminated from further consideration in either the baseline risk assessment or in an accelerated site cleanup on the basis of either incomplete exposure pathways or acceptable risk.

Tier 2, BASELINE ECOLOGICAL RISK ASSESSMENT (BERA)

The Baseline Ecological Risk Assessment, which is more rigorous and less conservative than the screening risk assessment, will require additional documentation as well

as further data collection and evaluation. The ERA shall be conducted during the Remedial Investigation phase.

The first activity (Step 3a) of the BERA is to refine the conservative exposure assumptions employed in the Tier 1 SRA, and recalculate the risk estimates. This re-evaluation may include considerations of background, sample detection frequency, bioavailability and realistic exposure scenarios.

The criteria for exiting Step 3a Refinement includes:

1) Re-evaluation of data supports a no further action designation for the site and thus allow exiting of the ERA process without completing the entire BERA.

2) If the re-evaluation of the assumptions still indicates an unacceptable risk, then the Tier 2 BERA is continued.

Probably the most important aspects of Tier 2 BERA are project planning and study design/verification. These activities, which represent Step 3-5 of the EPA ecological risk assessment guidance, include extensive communication among and concurrence (if obtainable) from the regulators and stakeholders prior to proceeding from one step to another. As part of this tier, it is critical that the RPM fully understands the basis for any ecological risk assessment work proposed by support contractors and requested by the regulators. The RPM should approve such work only after sufficient justification for the work has been provided and adequately explained. This understanding of proposed work may include, but not be limited to,

- Aspects of data collection;
- Analytical methods;
- Assessment and measurement endpoints;
- Statistical analyses including Probabilistic Methods;
- Risk characterization;
- And most importantly how the study results will be used to support the risk management decisions for the site.

Specific aspects of problem formulation, study design, and risk characterization must be negotiated among the Navy and all appropriate parties (i.e. regulators), and documented through the use of the Scientific Management Decision

Points (EPA Superfund Ecological Risk Assessment Guidance). Advancement from one step of the BERA to the next will be dependent upon successful concurrence between the Navy and all appropriate parties. If concurrence is not obtained, document opposing positions and elevate to upper management before moving to the next step. Multiple iterations of BERA are not warranted.

At the conclusion of Tier 2 the BERA will provide a characterization of ecological risks posed by the site, and will support the RPM in making one of the following two risk management decisions:

1) No further evaluation and no remediation from an ecological perspective are warranted because the site does not pose unacceptable risk.

2) The site poses unacceptable ecological risks and additional evaluation in the form of remedy development and evaluation (Tier 3) is appropriate.

Tier 3: EVALUATION OF REMEDIAL ALTERNATIVES

Tier 3 is the evaluation of the remedial alternatives (including no action) with regards to; 1) the effectiveness of reducing risks to acceptable levels; 2) ecological impacts related to remedy implementation; and 3) residual risks. The Tier 3 evaluation of remedial alternatives is conducted during the Feasibility Study and focuses on the NCP Nine Evaluation Criteria for selection of the remedy. This is an important tier that is not always adequately considered (with regards to ecological risk and impacts) in the remedy selection process. If remedial alternatives are not adequately evaluated from an ecological perspective, the outcome of the remediation may be more detrimental to the environment than if the site had not been remediated. The ecological remedy evaluation should be conducted in conjunction with the human health remedy evaluation. The selected remedy from an ecological perspective should also be protective of human health.

At the conclusion of the Tier 3 evaluation of remedial alternatives, the RPM will have an evaluation that identifies for each alternative considered (including no-action) its risk reduction effectiveness and residual risk, potential environmental impacts, cost, technical merits and

benefits, and acceptance by the Navy and the stakeholders. This evaluation will then assist the Navy in selecting the final remedy for the site.

NATURAL RESOURCES

If there are natural resources potentially impacted by Navy releases then involve proper trustees during the ecological risk assessment process, to the extent practicable. Trustee involvement is encouraged in our cleanup program but Navy is the lead agency and the Navy and appropriate parties (i.e. regulators only) shall make all final decisions.

EXISTING ECOLOGICAL RISK ASSESSMENTS

Baseline ecological risk assessments that are already underway should meet the substantive requirements of Tier 1, 2 and 3.

Screening Risk Assessments already underway should meet the substantive requirements of Tier 1, SRA (Steps 1 and 2) including: problem formulation and conceptual model development, exposure estimation, preliminary risk calculation, and COC determination.

Baseline Ecological Risk Assessments that are already underway should meet the substantive requirements of Tier 2, BERA (Step 3 - 7) including: refinement of the screening risk assessment (conceptual model or problem formulation), determination of the data quality objectives and study design, development of the field investigation/data analysis, and characterization of risk.

Evaluations of remedial alternatives that are already underway should meet the substantive requirements of Tier 3 utilizing the data from the screening and baseline ERAs.

NAVY POLICY
FOR
CONDUCTING ECOLOGICAL RISK ASSESSMENT

BACKGROUND

This policy document complements the Department of the Navy Environmental Policy Memorandum 97-04; Use of Ecological Risk Assessment (ltr 16 May 1997). The purpose of this document is to provide clarification of the Navy's policy on Ecological Risk Assessment (ERA) and the manner in which ERAs shall be implemented for Navy in the Environmental Restoration Program. The goal of Navy policy is to ensure to the fullest extent possible that ERAs conducted are scientifically based, defensible, and done in a manner that is cost effective while protecting human health and the environment.

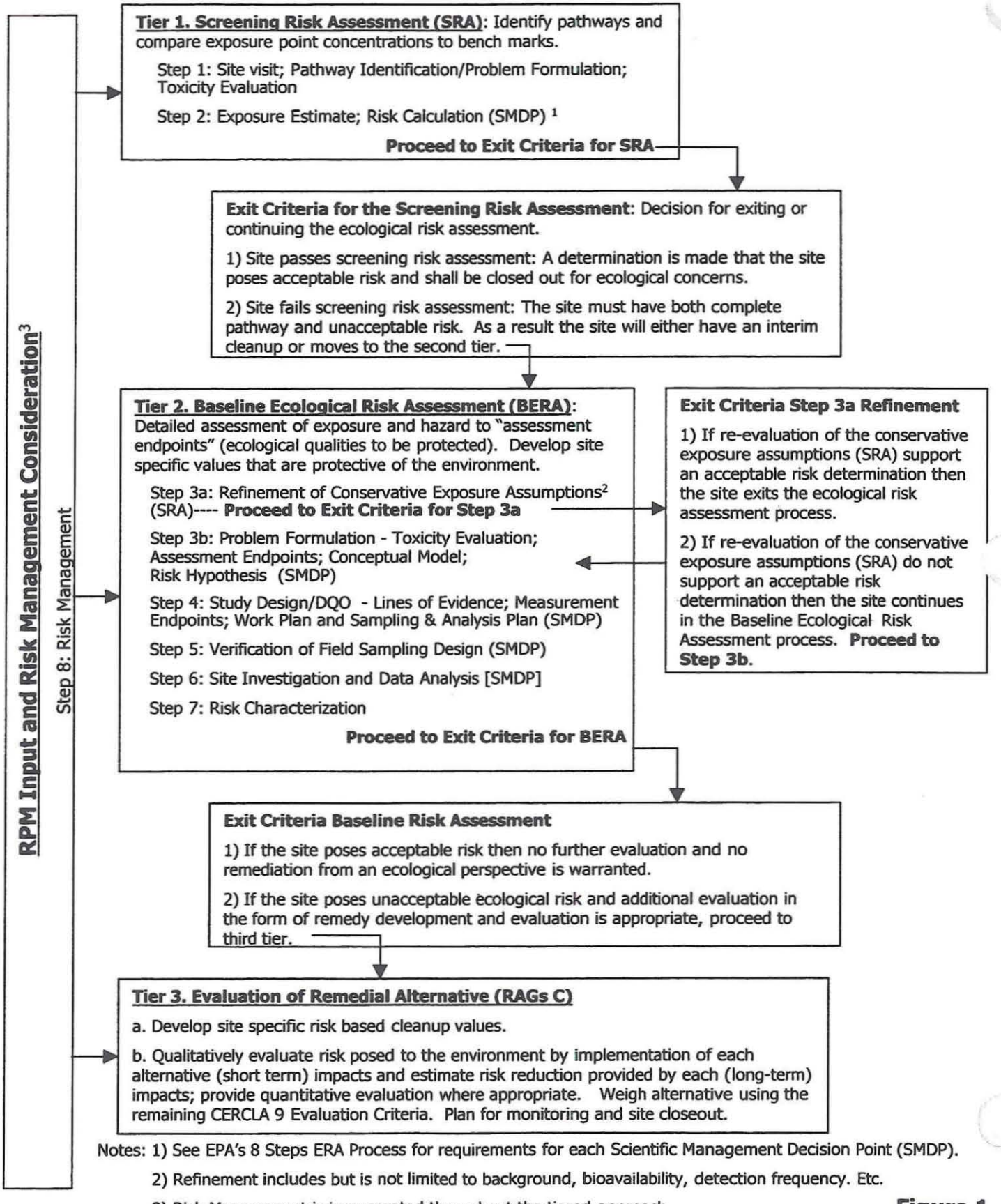
APPLICABILITY

Policies and procedures contained herein apply to Ecological Risk Assessments funded under Environmental Restoration, Navy (ER,N) and Base Realignment and Closure (BRAC).

POLICY

Navy policy for conducting ERA's identifies a three-tiered approach which emphasizes frequent interactions and concurrence among the Navy project team (Remedial Project Managers (RPM), Remedial Technical Managers (RTM), regulators, and contractors) and identifies specific decision points and criteria for exiting from or proceeding on with the risk assessment process. This tiered approach enhances the 8-step process identified in the Environmental Protection Agency (EPA) Interim Final Ecological Risk Assessment Guidance for Superfund, 5 June 1997, and consists of following tiers: Tier 1, Screening Risk Assessment; Tier 2, Baseline Ecological Risk Assessment; and Tier 3, Evaluation of Remedial Alternatives (Figure 1). The tiered approach is also consistent with and fully integrated with the Installation Restoration Program.

Navy Ecological Risk Assessment Tiered Approach



Notes: 1) See EPA's 8 Steps ERA Process for requirements for each Scientific Management Decision Point (SMDP).

2) Refinement includes but is not limited to background, bioavailability, detection frequency. Etc.

3) Risk Management is incorporated throughout the tiered approach.

Figure 1

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ECOLOGICAL RISK TECHNICAL ASSISTANCE TEAM

Background: The NCP requires that an Ecological Risk Assessment (ERA) be conducted as a part of the CERCLA Remedial Investigation (RI) at all Installation Restoration (IR) sites. Prior to 1997, there was only limited EPA guidance on how ERAs were to be conducted to ensure that the Navy was being fully protective of the environment in the cleanup of IR sites. Inconsistencies in the way ERAs were conducted added cost and time to the IR process. In May 1997, ASN issued Policy Memorandum 97-04 on the Use of Ecological Risk Assessments within the Navy's IR program that identified broad-based criteria on ERA levels of effort and approaches in an attempt to maximize the benefits from ERAs. In June 1997, EPA's Office of the Environmental Response Team published Ecological Risk Assessment Guidance for Superfund [ERAGS]: Process for Designing and Conducting Ecological Risk Assessments. This guidance outlined a definitive eight-step ERA process. Although the EPA process allows for a standardized ERA approach and the ASN Policy further defines levels of efforts, EFD/A CLEAN contractors have not fully integrated this into on-going ERA efforts in the IR program.

Approach: In order to maximize the cost savings and time reduction benefits of implementing a Navy-wide consistent ERA approach, NAVFAC has established a centrally funded Ecological Risk Technical Assistance Team (ERTAT) to assist EFD/As with the technical issues associated with EPA's ERA process. The ERTAT consists of NFESC, as Team Coordinator, and EPA's Environmental Response Team (ERT), and SPAWAR System Center (SSC) for technical support. NAVFAC's unique relationship with ERT allows the EFD/As access to the EPA experts that developed the ERA guidance. Inclusion of SSC provides the EFD/As access to the Navy's in-house sediment and marine sampling and analytical expertise.

The ERTAT is available to EFD/As to provide the following types of support:

- Work one-on-one with RPMs and Navy contractors to develop strategies for strengthening current ERAs and addressing regulator concerns,
- Assist with ERA scoping and reviewing workplans and reports,
- Provide concrete direction to Navy ERA support contractors on the Navy's ERA approach,
- Provide technical assistance at regulatory meetings,
- Work with EFD/A management to strengthen existing in-house ERA technical support,
- Expedite ERA training and technology transfer to the EFD/As through the CECOS ERA Course and the ESC Remedial Innovative Technology Seminars (RITS),
- Develop ERA Tools to assist RPMs,
- Transfer lessons learned throughout the Navy,
- Access to specialized EPA ecological risk expertise,
- Access to Navy contaminated sediment risk analysis and modeling expertise,
- Access to advanced sediment and water column assessment technologies,
- Elevate guidance needs to NAVFAC.

Utilization of the ERTAT will ensure that the Navy conducts technically sound, efficient ERAs within the IR process to bring sites to closure in a manner that is fully protective of the environment in accordance with Navy Policy and EPA guidance.

Point of Contact: For further information or access to the ERTAT, contact the ESC Team Coordinators:

Ms Ruth Owens
(805) 982-4798 or DSN 551-4798
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broderickpc@nfesc.navy.mil

From: **Wright, James W**
Sent: Friday, January 15, 1999 6:56 AM
To: Allison, Sidney L; Smith, Phil N.; Sakamoto, Dana N; Waki, Mel Z
Cc: Markert, Scott; Harrison, Brian; Eikenberry, Steve; Dailide, Ed A CAPT; 'Olson, Dave'; Bianchi, D.Scott CAPT
Subject: NAVFAC Ecological Risk Technical Assistance Team

Across NAVFAC's cleanup programs, we have encountered increasing difficulty in consistently and cost effectively addressing the requirement for Ecological Risk Assessment as part of our investigative studies. Enclosed please find a point paper describing NAVFAC's Ecological Risk Technical Assistance Team, established to support our RPMs in the area of ecological risk assessment.

EPA's Environmental Response Team (ERT) in Edison, NJ is the Nation's center of expertise for environmental response, and, more specifically of concern to us, ecological risk assessment. We have had a great deal of success in the past in integrating ERT support into our training and program management, on a somewhat ad hoc basis. The subject teaming arrangement expands upon and formalizes that relationship. ERT also has on staff forward-deployed employees of the Fish and Wildlife Service and NOAA, easily accessible through this Team. We have entered into a unique inter-agency relationship with ERT to access this widely recognized procedural and technical expertise. I believe we will immediately see benefits in the consistency of application of our cleanup program management and regulatory interface, as well as cost effectiveness (for Navy and EPA). We have also included SPAWAR's System Center (SSC) in San Diego to provide our RPMs ready access to their considerable marine and estuarine sampling and analytical capabilities.

I have tasked Steve Eikenberry at NFESC to act as Team Coordinator. His office will coordinate linking our cleanup program support needs with the appropriate consulting capability available through this Team, facilitating ease of access by NAVFAC EFDs and RPMs. He will also track the level of support and a few other business metrics (for me), so that I can effectively measure and fine tune the Team arrangement and its resourcing over time.

This effort is centrally funded from my office. There is no requirement for EFDs to fund the technical support provided by this team. I expect this to be the option of first choice at each EFD in obtaining ecological risk assessment procedural and technical consultation support for NAVFAC's cleanup programs.

Please contact my office or the POCs given in the attached point paper to best understand how to access this capability and integrate it into your program management and execution.

v/r,
Jim

James W. Wright, Ph.D., P.E.
Director of Environmental Programs
Naval Facilities Engineering Command
(202)685-9312

B4

Navy Policy for Conducting Ecological Risk Assessments

Presented by
Wanda Holmes, CNO
Ruth Owens, NFESC

CNO Policy - Purpose

"...to provide clarification of the Navy's policy on Ecological Risk Assessments (ERA) and the manner in which ERAs shall be implemented for Navy in the Environmental Restoration Program."

CNO Policy - Goal

- To ensure to the fullest extent possible that ERAs conducted:
  - Are scientifically based
  - Are defensible
  - Are done in a manner that is cost effective
  - Maintain protection of the environment

CNO Policy Details

- Fully Consistent with EPA ERA Guidance
- Three-Tiered Approach
  - Tier 1: Screening Risk Assessment (SRA)
  - Tier 2: Baseline ERA (BERA)
  - Tier 3: Evaluation of Remedial Alternatives
- Emphasizes Frequent Interactions & Concurrence with Regulators

Tier 1. Screening Risk Assessment

- Use Existing Data
- New or additional data not required unless:
  - No site data exists
  - Lack of full sweep of chemical data
- Costs should be low
- 2 - 3 month completion time

Tier 1. Screening Risk Assessment Exit Criteria

1) Site passes screen:
   - incomplete exposure pathway
   - absence of unacceptable risk
   - site closed for ecological concerns
2) Site fails screen:
   - complete exposure pathway
   - unacceptable risk
   - perform interim clean-up or move to Tier 2
3) Site fails, but COPC are eliminated from further consideration

Tier 2. Baseline ERA

- More rigorous & less conservative
- Further documentation required
- Additional data collection & evaluation
- **First activity is refinement of exposure assumptions (Step 3a)**

Tier 2. Baseline ERA - Step 3a

Refinement of assumptions may include:

- considerations of background
- sample detection frequency
- Bioavailability
- realistic exposure scenarios

Tier 2. Baseline ERA - Step 3a Exit Criteria

1) Re-evaluation of data supports NFA and site exits the ERA

2) Re-evaluation of data continues to show unacceptable risk, Tier 2 Baseline ERA continues

Tier 2 - Baseline ERA

RPMs must:

- Do project planning and study design/verification (EPA Steps 3 - 5)
- Clearly understand their support contractor's proposed ERA work before moving forward
- Communicate with and receive concurrence from regulators & stakeholders through the SMDPs
- Document all opposing positions and elevate to Navy management in case of non-concurrence

Tier 2 - Baseline ERA Exit Criteria

RPM empowered to make one of the following risk management decisions:

1) NFA from ecological perspective

or

2) Site poses unacceptable ecological risk and evaluation of remedies is warranted - move to Tier 3

Tier 3. Evaluation of Remedial Alternatives

The purpose of Tier 3 is to ensure that remedial alternatives are adequately evaluated from an ecological perspective, so that the outcome of the remediation is not more detrimental to the environment than if the site had not been remediated.

Tier 3 - Evaluation of Remedial Alternatives

At conclusion, should have identified for each alternative:

- Effectiveness at reducing risk
- Potential environmental and human health impacts
- Residual risk
- Cost ($)
- Technical merits & benefits
- Acceptance by Navy & Stakeholders

RPM Input and Risk Management Considerations (Step 8)

- Risk Management Considerations are incorporated throughout the tiered approach

Natural Resources

"If there are natural resources potentially impacted by Navy releases then involve proper trustees during the ecological risk assessment process, to the extent practicable. Trustee involvement is encouraged in our cleanup program but Navy is the lead agency and the Navy and appropriate parties (i.e. regulators only) shall make all final decisions."

Existing ERAs

"Baseline ecological risk assessments that are already underway should meet the substantive requirements of Tier 1, 2 and 3."

Value Added by the Tiers

- Clarifies the EPA process
- Clearly identifies exit points
  - Don't have to do all eight steps
- Emphasizes EPA's initial Step 3 effort
  - Refines the assumptions & PCOC list
- Helps Focus the ERA
  - Emphasizes the screen first
- Mirrors Human Health Risk Assessment process

NAVY ERTAT

- **Centrally funded so no cost to RPMs**
- **Team members:**
  - **NFESC as Team Coordinator**
  - **EPA ERT as primary technical support**
  - **SSC for sediment specific sampling and analytical support**
- **Available Support**
  - **technical guidance on ERA scoping and designs**
  - **review ERA workplans and reports**
  - **technical strategies to meet regulatory concerns**